

## **REMARKS**

Claims 24-36 were examined and reported in the Office Action. Claims 24-36 are rejected. Claim 36 is canceled. Claims 29 and 34 are amended. Claims 24-35 remain. Applicant submits a drawing including sketches A and B as support for the remarks below. These drawings are not new drawings or replacement drawings, and are only submitted to assist in understanding the remarks below.

Applicant requests reconsideration of the application in view of the following remarks.

### **I. 35 U.S.C. § 112, first paragraph**

A. It is asserted in the Office Action that the specification is objected to under 35 U.S.C. § 112, first paragraph. Applicant respectfully disagrees. As clearly revealed by the type hatching used in Applicant's Figures, the shoulders B are made of a metal. Applicant has also amended the specification for clarity. No new matter is added.

Additionally, "the arrows Fc" recited on page 8, line 23, are the axis of the liners CH, as represented in Figure 5. Applicant has amended the specification for clarity. No new matter is added.

Accordingly, withdrawal of the 35 U.S.C. § 112, first paragraph objections for the specification are respectfully requested.

B. It is asserted in the Office Action that claims 24-28 and 34-36 are objected to under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement.

It is asserted in the Office Action that claims 24 to 28 are rejected as failing to comply with the written description requirement, stating that "filling the mold cavity by gravity through said at least one risering core" was not adequately disclosed in the description. Applicant respectfully disagrees. Applicant notes that the above-mentioned limitations are fully supported in the specification, for example at: page 4, 1.8-9: "feeding the mold with its liquid alloy core by gravity;" page 5, 1.19-20: "a risering in an upper area of the mold for feeding the liquid alloy by gravity;" and page 8, 1.13-17: "the liquid alloy feeds the mold by tilting across the risers."

Additionally, the description discloses the possibility of using a relay ladle, connected to one of the cheeks (see on page 8, line 25 and figure 5 for example), which is clearly located at the top of the mold, and the filling is said to be realized by tilting around an horizontal axis.

Also, the molding technique by using gravity via risers is well known to a person of ordinary skill in the art. If the Examiner would like, Applicant can submit evidence (note that risers are merely columns in communication with the mold cavity, storing an excess of liquid metal). Consequently, claim 24 is clearly supported by the description.

Applicant has amended claim 34 by deleting limitations and making claim 34 depend on claim 24. Applicant's claim 34 is supported in the original specification, for example, at page 7, 1.6-7: "*cylinder block comprises liners CH and cooling units RE integrated when the core is drawn;*" page 8; 1.30-31 and figure 5: "*figure 5 also shows shoulders B, liners CH in which the cylinder barrels FC of the bundle of cores are formed;*" and page 3, 1.26-27; "*in particular when said [crankshaft] bearings comprise liners inserted during casting.*" Consequently, as will clearly appear to the skilled person, the liners are integrated to the cylinder blocks before the building of the core. No new matter is added.

Applicant has canceled claim 36. Therefore the 35 U.S.C. § 112, first paragraph objection to this claim is moot.

Accordingly, withdrawal of the 35 U.S.C. § 112, first paragraph objections for claims 24-28 and 34-36 are respectfully requested.

## **II. 35 U.S.C. § 103(a)**

A. It is asserted in the Office Action that claims 24-28 are rejected in the Office Action under 35 U.S.C. § 103(a) as being unpatentable over U. S. Patent No. 6,527,039 issued to Shade ("Shade"). Applicant respectfully traverses the aforementioned rejection for the following reasons.

According to MPEP §2142

[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. (*In re Vacek*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

Further, according to MPEP §2143.03, “[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (*In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).” “*All words in a claim must be considered in judging the patentability of that claim against the prior art.*” (*In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added.)

Applicant’s claim 24 contains the limitations of

forming a core assembly having a plurality of barrels, each barrel having a liner therearound and intended to form respective cylinders in the part, crankshaft bearing zones and at least one cooling unit in a region opposite the barrels, positioning the core assembly in a mold cavity defined by a metallic mold shell, the cooling unit is located at a bottom portion of said core assembly, further positioning in an upper region of the mold cavity at least one risering core, and filling the mold cavity by gravity through said at least one risering core.

It is asserted in the Office Action that Shade discloses filling of a mold through the location at parting line SL, which is near the top of the mold. However, the parting line SL of Shade clearly extends from the top to the bottom of the mold. It would consequently be obvious for somebody aiming at filling the mold of Shade by gravity, to provide a passageway which would extend along said parting line SL between the parting surfaces 14k, 26k: the liquid would consequently be fed by gravity directly at the bottom area of the mold (as shown in enclosed sketch A). Digging a passage in the upper part of the mold from the side wall 26m, at the level of the parting line (see enclosed sketch B), to the upper part of the mold, in order to fill the mold

with molten metal from the upper part thereof, certainly is not something an ordinary person skilled in the art would think about because it would be much more complicated and further inconsistent in view of the paragraph in col. 1, 1.40 to 60, where Shade indicates therein that the mold is filled from the bottom. Consequently, Shade does not teach, disclose or suggest at all the filling of the mold by gravity from the top of the mold (via risers), i.e. remotely from the cooler.

Moreover, Applicant's claimed invention improves the quality of the casting because of the combination of the use of a metal mold shell, of cooling unit(s) in the bottom of the mold opposite the risering, filling by gravity from the top, and a central core package. That is, Applicant's claimed invention associates a gravity filling from the top with a central core package (which associates the most critical surfaces) and with an effective cooling system, which does not interfere with the dimensional characteristics (see page 9, 1.13 to 15) of the central core package, as the cooling unit is positioned in the bottom of the mold. Additionally, Applicant's combination of claimed features improves the mechanical characteristics of the casting. In Shade, it is actually necessary to provide a metal pin system to ensure that the stripping could occur in the two directions D and D' (see Applicant's figure 2), or a liner-holder pin system, which the necessary integration with a risering system would make it extremely difficult to carry out. The method of Applicant's claimed invention solves this problem because of the claimed combination of the features recited in claim 24.

The ordinary person skilled in the art would not try to apply the teaching of Shade to filling by gravity, with the mold positioned with the crankshaft bearings at the bottom without any incitation to do so, given the difficulties encountered in the Prior Art.

Since Shade does not teach, disclose or suggest all the limitations of Applicant's claim 24, as listed above, Applicant's claim 24 is not obvious over Shade in view of no other prior art since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from claim 24, namely claims 25-28, would also not be obvious over Shade in view of no other prior art for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) objections for claims 24-28 is respectfully requested.

**B.** It is asserted in the Office Action that claims 29-33 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over Shade, and further in view of U. S. Patent No. 2,783,510 issued to Dolza et al. (“Dolza”). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Applicant’s amended claim 29 directly depends on claim 24. As asserted above in section IIA, Shade does not teach, disclose or suggest Applicant’s claim 24 amendments of

forming a core assembly having a plurality of barrels, each barrel having a liner therearound and intended to form respective cylinders in the part, crankshaft bearing zones and at least one cooling unit in a region opposite the barrels, positioning the core assembly in a mold cavity defined by a metallic mold shell, the cooling unit is located at a bottom portion of said core assembly, further positioning in an upper region of the mold cavity at least one risering core, and filling the mold cavity by gravity through said at least one risering core.

Dolza discloses coring of engine castings for forming cylinder blocks of V-type engines. Dolza, however, does not teach, disclose or suggest Applicant’s claim 24 limitations of

at least one cooling unit in a region opposite the barrels, positioning the core assembly in a mold cavity defined by a metallic mold shell, the cooling unit is located at a bottom portion of said core assembly, further positioning in an upper region of the mold cavity at least one risering core, and filling the mold cavity by gravity through said at least one risering core.

Therefore, even if Shade is combined with Dolza the resulting invention would still not teach, disclose or suggest all the limitations of Applicant’s claim 24, as listed above. Therefore, Applicant’s claim 24 is not obvious over Shade in view of Dolza since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from claim 24, namely claims 29-33, would also not be obvious over Shade in view of Dolza for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) objections for claims 29-33 is respectfully requested.

C. It is asserted in the Office Action that claim 34 is rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over Shade, in view of Dolza, and further in view of U.S. Patent No. 5,771,995 issued to Helgesen et al. (“Helgesen”). Applicant respectfully traverses the aforementioned rejection for the following reasons.

Applicant’s amended claim 34 directly depends on claim 24. As asserted above in section IIB, Shade in view of Dolza does not teach, disclose or suggest Applicant’s claim 24 amendments of

forming a core assembly having a plurality of barrels, each barrel having a liner therearound and intended to form respective cylinders in the part, crankshaft bearing zones and at least one cooling unit in a region opposite the barrels, positioning the core assembly in a mold cavity defined by a metallic mold shell, the cooling unit is located at a bottom portion of said core assembly, further positioning in an upper region of the mold cavity at least one risering core, and filling the mold cavity by gravity through said at least one risering core.

Helgesen discloses a core assembly process using liners that are heated by induction while in a cylinder block mold. Helgesen, however, does not teach, disclose or suggest Applicant’s claim 24 limitations of

at least one cooling unit in a region opposite the barrels, positioning the core assembly in a mold cavity defined by a metallic mold shell, the cooling unit is located at a bottom portion of said core assembly, further positioning in an upper region of the mold cavity at least one risering core, and filling the mold cavity by gravity through said at least one risering core.

Therefore, even if Shade is combined with Dolza and Helgesen, the resulting invention would still not teach, disclose or suggest all the limitations of Applicant’s claim 24, as listed above. Therefore, Applicant’s claim 24 is not obvious over Shade in view of Dolza and Helgesen since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claim that directly depends from claim 24, namely claim 34, would also not be obvious over Shade in view of Dolza and Helgesen for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) objection for claim 34 is respectfully requested.

**D.** It is asserted in the Office Action that claims 35 and 36 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over Shade, in view of Dolza and Helgesen and further in view of U.S. Patent No. 6,837,297 issued to Dakan, Sr. et al. ("Dakan"). Applicant has canceled claim 36. Therefore, the 35 U.S.C. § 103(a) rejection of claim 36 is moot.

Applicant's claim 35 indirectly depends on claim 24. As asserted above in section IIC, Shade in view of Dolza and Helgesen does not teach, disclose or suggest Applicant's claim 24 amendments of

forming a core assembly having a plurality of barrels, each barrel having a liner therearound and intended to form respective cylinders in the part, crankshaft bearing zones and at least one cooling unit in a region opposite the barrels, positioning the core assembly in a mold cavity defined by a metallic mold shell, the cooling unit is located at a bottom portion of said core assembly, further positioning in an upper region of the mold cavity at least one risering core, and filling the mold cavity by gravity through said at least one risering core.

Dakan discloses metal bottle molds that have a refined grain structure in the region of the mold that terminates in the glass-engaging surface and from metal inserts of a different composition that form part of the glass-engaging surface. Dakan, however, does not teach, disclose or suggest Applicant's claim 24 limitations of

at least one cooling unit in a region opposite the barrels, positioning the core assembly in a mold cavity defined by a metallic mold shell, the cooling unit is located at a bottom portion of said core assembly, further positioning in an upper region of the mold cavity at least one risering core, and filling the mold cavity by gravity through said at least one risering core.

Therefore, even if Shade is combined with Dolza, Helgesen and Dakan, the resulting invention would still not teach, disclose or suggest all the limitations of Applicant's claim 24, as listed above. Therefore, Applicant's claim 24 is not obvious over Shade in view of Dolza, Helgesen and Dakan since a *prima facie* case of obviousness has not been met under MPEP

§2142. Additionally, the claim that indirectly depends from claim 24, namely claim 35, would also not be obvious over Shade in view of Dolza , Helgesen and Dakan for the same reason.

Accordingly, withdrawal of the 35 U.S.C. § 103(a) objections for claims 35 and 36 is respectfully requested.



### CONCLUSION

In view of the foregoing, it is submitted that claims 24-35 patentably define the subject invention over the cited references of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, he is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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#### **CERTIFICATE OF TRANSMISSION**

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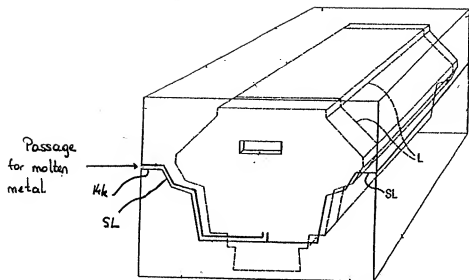


Figure A

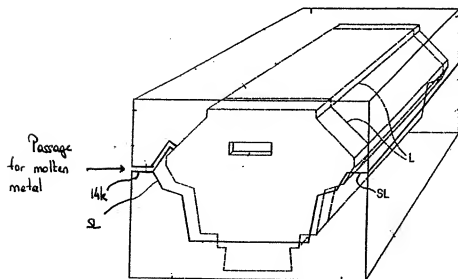


Figure B